

# **Low Maintenance Turf?**

by

Tom Cook

Associate Professor, Horticulture

Oregon State University

What is a low maintenance lawn? Who sets the standards? An honest answer to both of these questions is probably "I don't know". By my standards most people in western Oregon already have low maintenance lawns. Their lawns are mowed sporadically in spring, occasionally in summer and fall and not at all in winter. A clear majority don't irrigate at all and of those who do, few irrigate consistently. Perhaps seventy percent of these homelawns are never fertilized and very few are ever treated with herbicides for weed control. Sounds pretty low maintenance to me. In fact, total neglect might be a better description.

In spite of this current state of affairs many people seem to be obsessed with developing low maintenance lawns. Obviously their standards for low maintenance are different than mine. In my vision you put very little effort into maintaining your lawn and you get very little back. The other vision assumes you put very little into the lawn but it still looks lush, dense, green, and weed free. Seems like kind of a tall order.

For over ten years I have been looking into alternatives to conventional grass lawns. My goal has been to combine grasses with selected broadleaf plants in an attempt to produce an ecologically stable mixture of plants that would persist with fewer inputs than a typical lawn. Specifically I wanted to reduce mowing, irrigation, fertilizer, and pesticides. It has never been my intention to eliminate any of these inputs just to reduce them. I have also viewed this as a lawn and not a wild flower meadow. An ecolawn should be compatible with typical uses for conventional lawns including sitting, strolling, general play, and as a backdrop for the rest of the landscape.

The first plots planted at OSU were on a look-see basis and included several different grasses and flower mixes. We used these plots to get a feel for what to expect. We also played games with mowing heights. After four years it was clear that some mixes worked better than others so we initiated new trials to get a better feel for optimum components. Now I feel we have a good handle on the best grass components and what the performance characteristics of the flowers are. Below I've summarized what I think I have learned so far.

## **Mowing:**

So far we have mowed from once per week to once every 3 weeks. Three-week intervals work just fine and allow optimum flowering of the broadleaf components. In the spring if it's warm and moist vigorous growth occurs making it difficult to mow at the end of the three-week period. When this happens mowing every two weeks may be

more practical. Mowing weekly has had no deleterious effects on stand composition but of course flower intensity is not as good as with three-week intervals.

I have looked at mowing at 2" and 3.5" and have settled on the 2" height as most effective. At 3.5" I felt many of the low growing flowers were at a competitive disadvantage and in general the stand became thinner. At 2" it is still a turf and has the look and feel of a tended lawn. Feedback I've received from others indicates they are very happy with higher mowing heights and in one case no mowing at all. One person mowed weekly at 1.5" because the flowers clashed with the perennial flower garden nearby. Within broad limits it just doesn't matter how high or how often you mow as long as mow often enough to maintain plant balance in the mixture.

### **Irrigation:**

I learned early on that if the ecolawns are irrigated regularly they grow way too much and make mowing a real chore. Initially all of our plots were irrigated once a month during summer. As it turns out in most years we haven't had to irrigate that often. The basic plan is to wait as long as possible in spring before irrigating. In a wet spring we may not irrigate before the end of June. In a dry spring the first irrigation goes on around the first of June. After the first irrigation watch and wait. For the last several years we have managed to get by with only two irrigations per year. Three would probably be just about right to have attractive turf all summer without forcing growth.

If ecolawns are not irrigated they will be dormant probably by mid to late July in Corvallis. They cannot go through an entire summer with no water at all. As it is now the grasses generally go dormant before each scheduled irrigation. In successful plots the broadleaf components mask the dormant grasses so the plots remain uniformly green between irrigations.

When we irrigate these plots we do so very thoroughly putting on approximately 1.5" to 2.0" of water. This insures thorough wetting of the profile and has always been adequate to get through the next cycle with green plots. In a normal year this amounts to about 1/3 to 1/4 as much water as a regular lawn.

### **Fertilizer:**

To date all ecolawn plots have received either no fertilizer at all or one fertilizer application at the time of planting. On the relatively fertile soils at the Lewis-Brown Hort farm, this has yielded healthy vigorous lawns. By including legumes (strawberry or white clover) plots have produced adequate nitrogen to keep other components healthy. In fact, since clippings are normally returned, growth has increased over time, possibly due to nitrogen loading. This corresponds with normal spread and development of the clovers.

In general, the first year plots are somewhat thin and appear weak. In the second year mature appearance is achieved and the plots remain relatively stable after that time. Even on infertile soils my guess is that little or no fertilizer will be required once stands are established. These weak sites will probably benefit from complete fertilizer applications during the first year.

As constituted presently ecolawns should perform well at soil pH's between 5.5-7.0. Legumes perform best at pH's above 6.0 where adequate Ca, P, and K are available. In infertile acid soils incorporation of these elements may be necessary to insure rapid establishment and persistence. Other components seem to tolerate a wide range of soil conditions.

One final note, we have not inoculated clover with *Rhizobium* in any of our trials. In spite of this, strong nodule formation has consistently occurred.

### **Pesticides:**

What if you planted an ecolawn and it became invaded with thistles and false dandelion? As it turns out the dominant components in the present mixes are resistant enough to 2,4-D that you could selectively kill many common undesirable weeds should they encroach the stand. Of course most people who would want an ecolawn probably wouldn't care if some weeds were present.

In practice we've never had significant problems with weeds so there has been no need to apply herbicides. I have sprayed a grass-yarrow mixture with 2,4-D and successfully removed all undesirable weeds with only short-term injury to the yarrow. This occurred even though the yarrow was less than six months old.

While most ecolawn components are resistant to 2,4-D most are also susceptible to other herbicides such as dicamba, clopyralid, mecoprop, and triclopyr. Unless you really know what you're doing, herbicides have no place on these lawns.

There has been no need to treat ecolawns with either insecticides or fungicides. I guess the bottom line is that pesticides are essentially not needed on ecolawn mixtures.

## Component Characteristics:

### Grasses

The best grasses are the ones that are least competitive in low maintenance situations. Grasses with low fertility requirements tend to out-compete the broadleaf plants. Once this happens you have a clumpy weedy lawn.

I rank the grasses we have tested in Corvallis as follows:

Best	Perennial ryegrass Kentucky bluegrass
Acceptable	Red fescue Hard fescue Tall fescue
Too Competitive	Chewing's fescue Bentgrass

Perennial ryegrass and Kentucky bluegrass both have very high nitrogen requirements so they make good components in the mixtures.

Keep in mind that grasses that work well in Corvallis may not work well in other climates. For example, in Central Oregon where Kentucky bluegrass grows very well, it would be too competitive. In that climate a Perennial ryegrass base would be more appropriate. Regardless of where you live, **the key seems to be to choose non-competitive grasses.**

### Clovers, *Trifolium* sp.

We started off with common white clover and strawberry clover in separate mixes. These worked well but the white clover was too vigorous and produced more dry matter than I wanted. Strawberry clover is slightly less vigorous so all current mixes contain only it. Both clovers flower strongly. White clover flowers from early to mid-summer. Strawberry clover generally flowers from mid-summer on. Its flower period is very intense compared to white clover.

If I could I would replace both of these with less vigorous legumes. We have tested other clovers for that purpose but so far have found no suitable replacements. The goal is to find a good nitrogen fixer that doesn't grow much. In addition a clover that doesn't produce a lot of flowers would be desirable to reduce the number of bees attracted to the lawn in summer. With this in mind, we tried an annual clover in one experiment thinking it would serve its purpose through spring and go away during the summer. It did go away but it never came back.

In many ways clovers or other legumes are essential to the ecolawn concept but their propensity to attract bees is a definite turnoff for lots of people. There are commercial mixes available that do not have clover in them so consumers do have a choice. In our efforts to grow clover free plots they have consistently been invaded by wild clover anyway. This is not surprising since clovers are most competitive where nitrogen fertility is low.

The best clover we tested was a Strawberry clover, *Trifolium fragiferum*, called Fresa. It was developed as a substitute for grass lawns in New Mexico by Dr. Arden Baltensperger a number of years ago. It is relatively dense growing and stays low and compact. It blended well with other components and was not overly aggressive. By agricultural standards it is a low seed yielder so it was dropped from production. Now we are left with rank growing forage types that aren't nearly as attractive or functional as Fresa.



'Fresa' strawberry clover in an ecolawn at peak flower. Clovers compete well in summer when drought becomes an issue.



Yarrow, *Achillea millifolium*

Yarrow was selected because it is dark green, rhizomatous, moderately wear tolerant, and very drought tolerant. It is also very compatible with turfgrasses. On our mowing cycle it rarely flowers. Without a doubt, yarrow has been the star of the show during the summer months. It stays green longer than even the clover and blends quite well with most grasses. Currently we have straight plantings of yarrow which look good in summer but lose color and density in winter. This is definitely a plant that should be part of a mixture.

Currently we have plots with only yarrow and hard fescue which are developing nicely. In the future I'll look at more grass/yarrow combinations for non-flowering lawns that are extremely drought tolerant.



Yarrow comes on strong in summer, providing green when the grass is starting to go dormant.

English Lawn Daisy, *Bellis perennis*

Lawn daisies produce hundreds of beautiful flowers each spring without attracting bees. Because plants are low growing they contribute relatively little to



herbage production. They also have a good track record in low fertility sites.

In our plots daisies normally flower from March through May and range in color from white to red. Flowering remains strong even with the three week mowing cycle. I feel the daisies are the highlight of the mixes each spring.

As time passes the daisies we have planted tend to disappear from the mixes which is unfortunate. Normally the daisies hold up for about 4 to 5 years and then dwindle to a few isolated plants. While they last they are a delightful addition to the mixes.



Daisies reach their glory in spring from March through April when flowering is at its peak. When summer arrives and flowering stops, the daisies sort of disappear in the midst of clover and yarrow.

#### Baby Blue Eyes, *Nemophila menziesii*

This perennial was selected for its attractive blue flowers developing in spring about the time the daisies flower. It has been a poor performer over time but is stunning in the first spring after fall planting. It may be this plant can't tolerate regular mowing at 2". Baby blue eyes have never lasted more than one year in my plots.

## Roman Chamomile, *Chamaemelum nobile*

Vegetatively Chamomile looks similar to yarrow but is glossy and brighter green. When mowed it smells like pineapple. It has not been competitive over time but I still consider it a worthwhile component. It has flowered only sporadically in our trials.

## Other Plants

There are many other plants that could be used in ecolawns but seed is hard to come by in affordable quantities. Some of the species I would like to try, include lawn violets (*Viola sp.*), Speedwell (*Veronica filiformis*), wild Galium (*Galium verum*), and creeping buttercup (*Ranunculus repens*). Even Oxalis has potential. One company has included Sweet Alyssum in their mix to produce flowers the first year. I believe the possibilities are endless.

## Establishment:

Starting with a tilled and graded seedbed or one prepared by killing the old lawn and scarifying the surface via dethatching, we have had no problem establishing reasonably uniform stands. Best timing is probably spring or early fall. Late fall seedlings germinate just fine but broadleaf components are susceptible to frost kill at this time of the year.

As with any seeding, good seed soil contact is important to insure uniform germination. Mulching is acceptable only if the mulch is applied very light. Many of the broadleaf seeds are very small and can not emerge through a thick mulch.

In most situations fertilizing at the time of seeding is not necessary. If local knowledge or soil tests indicate a need for fertilizer, use a complete fertilizer low in nitrogen and high in phosphorous and potassium. High nitrogen may stimulate the grass at the expense of broadleaf development.

Seeding rates for ecolawns range from 1-4 lbs of mix per 1000 sq ft, depending on the mix. **For ryegrass or ryegrass plus fine fescue mixes I prefer 2 lbs of mix per 1000 sq ft.** Most seed companies recommend only one 1 lb. of seed per 1000 sq ft. If cost is an issue you can simply add another pound of straight perennial rye grass to the commercial mix to get to the 2 lb. level.

After planting, the site should be irrigated lightly several times per day until germination has occurred. After germination, irrigate the plots approximately weekly until a reasonably dense uniform stand is achieved. Mow as soon as the tallest plants are above the mowing height you have selected. If you plant spring, plan on irrigating every one to two weeks through the hottest summer months that first year. Only mature stands can tolerate prolonged drought. Fall seedlings that develop well will be



able to tolerate longer drought periods in their first summer.

### Mixing Your Own

While it sounds easy mixing your own ecolawns is somewhat of a chore. If you have the time and energy it can be done. The problem is finding components in the quantities you need at a price you can afford. The recipe that follows reflects my opinions and taste. You can put together any mix you want. Remember that in the long run only the components that tolerate mowing and prolonged drought will survive.

**Components listed below assume a total seed rate of 2 lbs mix/1000 sq ft.**

Grass:	Perennial ryegrass (newer varieties)	90% of mix by weight (= 817 grams/1000 sq ft)
Clover:	Strawberry clover	4% of mix by weight (= 36 grams/1000 sq ft)
Yarrow:	<i>Achillea millifolium</i>	5% of mix by weight (= 45 grams/1000 sq ft)
Daisies:	<i>Bellis perennis</i>	1% of mix by weight (= 9 grams/1000 sq ft)

### Summary:

While people often laugh at the notion of planting weeds on purpose, it is clear to me that many gardeners welcome the idea of ecologically stable lawns that will persist with fewer inputs than pure grass lawns while still providing functional turf. The mixes currently available are working but can be improved dramatically if better components can be developed. I believe those components exist and we need only to find a way to get them into the seed bag. As time passes I hope we make as much progress with this style of lawn as we have with all of the many grasses that breeders have developed in the last 30 years.

### Sources for ecolawns:

Nichols Garden Nursery 541-928-9280  
Albany, OR

Ask for the dryland mix.

Protime Lawn Seed 503-239-7518

Portland, OR

Ask for Fleur de lawn or PT-705-PDX.

lowmaint.urf